UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P O Box 1450
Alexandria, Virginia 22313-1450
www uspto gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/588,289	03/26/2007	Andrew Charlton Clothier	424662013300	2200

25227 7590 03/11/2009
MORRISON & FOERSTER LLP
1650 TYSONS BOULEVARD
SUITE 400
MCLEAN, VA 22102

EXAMINER	
PAUL, ANTONY M	
ART UNIT	**PAPER NUMBER**
2837	

MAIL DATE	DELIVERY MODE
03/11/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/588,289	CLOTHIER ET AL.	
	Examiner	Art Unit	
	ANTONY M. PAUL	2837	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 December 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 thru 5, 7 thru 16, 18 thru 20 and 28 thru 31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 thru 5, 7 thru 16, 18 thru 20 and 28 thru 31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 August 2006* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

Drawings

1. The drawings are objected to because blocks shown in figures 3, 6 and 7 needs to be labeled. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections – 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Regarding claims 28 and 29, the phrase "such that" renders the claim indefinite because it is unclear whether the limitations (a rotational angle between the on-advance

angle and the off-advance angle is substantially unchanged) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Applicants' fig. 5 or 9 shows varying off/on advance angle [13, 14]. Rotation angle between on advance angle and off advance angle is <u>substantially</u> unchanged is not clear with respect to fig. 5 or fig. 9.

Claim Rejections – 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 2, 3, 4, 5, 7, 9, 10, 11, 12, 14, 15, 16, 18, 19, 28, 29, 30 and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Kaplan et al. (6, 819, 008).

Claims:	Kaplan et al. teaching
Claims 1, 9, 18 and 19: A control map for a controller of an electrical machine having a rotor and at least one electrically energisable phase winding, the control map comprising:	Kaplan et al. discloses in figs. 5-6 a control map (see figs.4-5, step 51, map, col. 2, lines 52-56 & col. 6, lines 57-66) for a controller [40] of an electrical machine such as a switched reluctance machine [20] (driven by a motor [11], fig.1) having a rotor [24] and at least one electrically energisable phase winding [A1A2, or B1B2 or C1 C2] (see fig. 2), the control map comprising:
a predetermined advance angle profile representing energisation of the phase winding with respect to angular position of the rotor over a range of rotor speeds, and	Control map (fig.5) includes a predetermined advance angle profile such as the predetermined turn on & turn off conduction angles to energies phase windings [A-C] (fig.2) of said machine [20] associated with a range of rotor speeds [1000rpm to 5000 rpm], see col. 7, lines 6-

	26).
a predetermined angle correction factor to be applied to a predetermined portion of the advance angle profile,	fig. 8 shows adjustment or compensation of conduction angles in order to maintain a desired power output, (see col. 8, lines 19-62), application of predetermined angle correction factor is taught in the adjustment or compensation of conduction angles where turn on and turn off angles are increased or decreased to achieve the desired power, (see col. 9, lines 6-20). predetermined angle correction factor is implemented in the adjustment or compensation of turn-on and turn off conduction angles, which are predetermined (**turn-on & turn off angle defined by a predetermined angular relationship or orientation of the rotor 23 relative to the stator 21, see col. 5, lines 7-41**),
wherein the angle correction factor depends on a difference between a measured input power to the machine and a predetermined input power at a predetermined rotor speed.	Kaplan et al. shows in figs 1-2 operation of an electrical machine [20] using data mapping (figs.4-5),angle correction factor is implemented in the adjustment or compensation of conduction angles (step 63, fig.8), where angle adjustment depends on a difference between a measured input power [actual measured power] and a predetermined input power [desired power] (see steps 61-62, fig.8) (actual measured power [line 76] and desired power [line 71] is inputted to a comparator [75] for calculating the difference there between, see fig. 9, col.8, lines 31-67 and col. 9, lines 1-47) at a predetermined rotor speed such as rotor speeds from [1000rpm to 5000rpm] (a desired operating parameter set in a control map, col. 7, lines 6-37).
Further in regard to **claim 9**, measuring input power to the machine,	(phase currents measured, col. 2, lines 18-19, controller [40] receives magnitude of currents from leads [20a] and voltage

	magnitude from leads [30a], fig.1, col. 3, lines 8-34);

In regard to claims 2 & 4, a control map, in which the advance angle profile includes on and off advance angle data for a predetermined range of rotor speeds (Kaplan et al. shows in figs. 5-6, a control map includes operating data or parameters such as turn on angles and turn off angles for a predetermined range of rotor speeds such as [1000 rpm to 5000 rpm] (col.7, lines 6-26; adjustment of conduction angles by varying both turn on and turn off angles, which are advanced, see col. 9, lines 6-20).

In regard to claims 3 & 5, control map, in which the angle correction factor is applied to the on and off advance angle (angle correction factor is implemented in the adjustment or compensation of conduction angles and said angle correction depends on a difference of actual and desired power (se fig.8), where the turn on and turn off angles are increased or decreased to achieve said adjustment (see col. 8, lines 31-67 & col. 9, lines 1-20, fig.8).

In regard to claims 7 and 12, a control map, in which the angle correction factor comprises a change in angle required to reduce the discrepancy between the predetermined input power and the measured input power to within predetermined limits (Kaplan teaches control mapping, where adjustment/compensation of conduction angles (fig.8) to reduce the discrepancy between the predetermined input power and the measured input power to within predetermined limits such as to maintain an actual measured power at or close to a desired power so as to avoid undesirable variations in the amount of power in a machine system [10] (angles adjusted by varying turn on/off

angles, see col. 8, lines 19-67; turn on and turn off angles are increased or decreased to achieve the desired power, see col. 9, lines 6-20).

In regard to claim 10, Kaplan et al. teaches a method, in which the winding [A-C] (fig.2) is energized in accordance with the advance angle profile [turn on/off angles in the map, figs. 5-6] at a predetermined speed, which speed is associated with the predetermined input power (Kaplan teaches mapping technique relating to the generation of desired amount of current or desired power output using conduction angles, associated with the rotational speed of the rotor 23 of the motor 11,see col. 6, lines 40-66 & col. 7, lines 30-37; map includes predetermined rotor speeds, powers such as DC excitation voltages, see col. 7, lines 5-26; fig.9 shows desired power output associated with speed).

In regard to claim 11, a method in which the step of producing the angle correction factor includes applying predetermined incremental changes to the advance angle profile (Kaplan et al. teaches angle correction such as adjustment of turn on angles or conduction angles associated with the difference of power output, see fig.9 & col. 9, lines 5-19) and further teaches control map including different turn on or conduction angles in 5 electrical degree increments (smallest incremental step over which the conductions angles are effective, see col. 7, lines 2-18), measuring the input power after each incremental change (power output 77 is measured using a controller 78 (see fig.9), where turn on and conduction angles are adjusted associated with an increase or decrease of power, col. 8, lines 51-67 & col. 9, lines 1-5) and comparing the measured input power with the predetermined input power (fig. 9 shows a comparator

75 comparing an actual measured power [line 76] with a predetermined such as a desired power [line 71] (col. 9, lines 21-47).

In regard to claim 14, Kaplan et al. teaches (figs 1-2, 5-6) transmitting the angle correction factor such as adjusted conduction angles from a control map (fig.5) is provided to the controller [40] by means of radio frequency signals such as voltage & current signals from respective leads ([30a-b], 20a) (any voltage or current signal has a frequency such as energisation of phase windings [A-C] (fig.2) occur at a controlled frequency, col. 1, lines 43-44).

In regard to claim 15, Kaplan et al. teaches a method, in which the input voltage [30a-b] applied to the phase winding [A-C] (fig.2), is substantially constant (same amount of current applied to a dc bus [30a] associated with a constant power, col. 6, lines 1-18).

In regard to claim 16, a computer readable medium comprising a computer program stored thereon (flow charts, figs 4, 8) for controlling a machine [20] (Kaplan et al. teaches usage of computer simulations, see col. 7, lines 27-47, col. 8, lines 19-21).

In regard to claims 28 and 29, angle correction factor such as adjusted conduction angles are applied to both the turn on and turn off angels as taught by Kaplan et al. (col. 9, lines 6-8). The added limitation such that a rotation angle between the on-advance angle and the off-advance angle is substantially unchanged is also implemented because the turn–on angles are adjusted (fig.9) so that the rotor 23 poles [X1, X2] become aligned with the stator poles [A1, A2] (fig.2, see col. 5, lines 12-17).

In regard to claims 30 and 31, a control map, wherein the angle correction factor further depends on an input voltage (input voltage such as the dc excitation voltage in a control map is utilized for angle adjustment, 275V to 375V see col. 7, lines 10-11 and angle correction factor is implemented in the adjustment of angles (fig.9) associated with a desired power or predetermined voltage magnitude, see col. 8, lines 40-50).

Claim Rejections – 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1thru 5, 7 thru 16, 18, 19, 20, 28, 29, 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ookawa et al (5, 796, 226) in view of Kaplan et al. (6, 819, 008).

Claims:	**Ookawa et al. teaching:**
Claims 1, 9, 18: A control map for a controller of an electrical machine having a rotor and at least one electrically energisable phase winding, the control map comprising:	Ookawa et al. disclose in (fig.1) a control map such as a memory map [13a, 13b,13c] for a controller [ECU] of an electrical machine [1] having a rotor [R] (figs.18, 20), at least one electrically energisable phase winding [1a], control map [13a, 13b,13c] comprising:
a predetermined advance angle profile representing energisation of the phase winding with respect to angular position of the rotor over a range of rotor speeds, and	A predetermined advance angle profile such as a memory map 13a associated with table 2, which includes the energisation on and off angle, Cnm contains energisation on/off angle, see,

	column 14, lines 18-67 (control unit such as ECU (fig.1) includes a memory 13a, which includes energisation on/off angle, see column 15, lines 1-41), and fig. 9 shows energisation information such as current S4 applied for each phase [phase1-phas3] of respective phase coils [1a-1c] (fig.1a) associated with angular position (angle X, X+15°, X+30°) of the rotor[R] of a motor 1 (see fig.18 & col. 6, lines 66-67, col. 7, lines 1-2, 20-32; energisation of coil associated with angle of rotation of rotor, see column 10, lines 6-9) over a range of rotor speeds (rpm or number of revolutions, see tables 1-2, column 13, lines 33-67, column 14, lines 18-50, rotational speed range, see column 15, lines 42-60, column 16, lines 28-36),
a predetermined angle correction factor to be applied to a predetermined portion of the advance angle profile,	Fig. 19 shows an advance angle correction of the energisation off angle (see col. 5, lines 57-60, col. 15, lines 20-40), where the energisation on/off angle is included in memory map 13a and fig. 4a further teaches a predetermined angle correction factor [CPS] outputted to memory; correction to commanded angle, (see figs.5a-b); angle correction associated with speed, (see column 16, lines 5-19) & memory map 13a includes energisation on and off angles, which are adjusted (see col. 24, lines 3-26);
Further in regard to **claim 9**, measuring input power to the machine.	(current sensors [2-4] measure currents in the coils [1a-1c], where the current is proportional voltage, see col. 7, and lines 33-45),
Further in regard to **claim 18**, an electrical machine incorporating a control map as claimed claim 1, 2 or 4.	Figs.1. shows a controller [ECU], which includes a memory map [13] for an electric motor [1].

Ookawa et al. teaches angle correction or angle adjustment associated with predetermined speed (see fig.19, col. 24, lines 3-26), but do not mention angle correction factor depends on a difference between a measured input power to the machine and a predetermined input power.

A difference of power output such as a current output S4b associated with input current S4 (see figs.1b, 2, 9) corresponds to an angle [X, X+15, X+30..] (fig.9) of rotation of a rotor R of motor [1] (fig.18), where fig. 2 shows energisation of a winding [1a] of the motor [1] associated with a difference of power such as the predetermined voltage [Vr2]-measured voltage [Vs6] (inputted to the comparator 7a associated with the measured current value [S6] from current sensor 2 & predetermined current command S4). Ookawa et al. teaches selecting a current value from memory 13a for each angle of rotation of rotor [R] of the motor (see fig.1a, col. 20, lines 1-20). Therefore it is obvious that an angle correction factor depends on the difference of the power output (S71, fig.2) because energisation of the motor [1] is adjusted by determining a current value for every incremental angle [0.7°] of rotation so that an acceleration of the rotational speed of the motor is enabled to track a target acceleration accurately (see col. 11, lines 42-58).

Kaplan et al. disclose in figs 1-2 operation of an electrical machine [20] using data mapping, where an angle correction factor such as in the adjustment or compensation of conduction angles based on a difference between a measured input power [actual measured power] and a predetermined input power [desired power] (actual measured power [line 76] and desired power [line 71] is inputted to a comparator

[75] for calculating the difference there between, see figs. 8-9, col.8, lines 31-67; turn on and turn of angles are increased or decreased to achieve a desired power, see col. 9, lines 1-47) at a predetermined rotor speed such as rotor speeds from [1000rpm to 5000rpm] (see, col. 7, lines 6-37).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the angle adjustment based on a difference of powers of Kaplan et al. in the system of Ookawa et al. because an improved operating method of a switched reluctance machine at a high efficiency is achieved (col. 1, lines 12-15).

In regard to claims 2 & 4, Ookawa et al. teaches advance angle profile such as a control map [13a, b, c] includes on/off angle data for a predetermined range of rotor speeds such the rotor revolutions shown in tables 1-2 of said map [13a, b, c] (col. 13, lines 23-67, col. 14, lines 1-34, col. 15, lines 20-66, col.16, lines 1-36, figs. 19, 21-22).

In regard to claims 3, 5, 28 and 29, Ookawa et al. teaches angle correction factor applied to the on and off advance angle such as angle correction is an advance value (see fig. 19, col. 15, lines 20-66 & col.16, lines 1-36) calculated for both an energisation on and off angles in a control map [13a, b, c] (angle correction for commanded angles, see figs 5a-b; advance off angle, see fig.22; angle correction is applied to the rotation angle of a rotor [R] shown in figs.18, 20). The newly added limitation rotation angle between the on-advance angle and the off-advance angle is substantially unchanged depends upon the energisation current (such as 200A, fig.22) applied to the motor coils [1a-1c] (fig. 1a).

In regard to claims 7 and 12, a control map, in which the angle correction factor comprises a change in angle required to reduce the discrepancy (or difference) between the predetermined input power and the measured input power to within predetermined limits.

Ookawa et al. teaches angle correction (fig.19) and also teaches a difference of power output such as a current output S4b associated with input current S4 (see figs.1b, 2, 9) corresponds to change in angle [X, X+15, X+30..] (fig.9). Ookawa et al shows in figs.2, 11 measured current or voltage value [Vs6] is controlled to be within a predetermined current or voltage reference value [Vr2] and teaches energisation of the motor [1] is adjusted by determining a current value for every incremental angle [0.7°] of rotation (col. 11, lines 50-53) and further teaches energisation off angle is adjusted to prevent discrepancy such as generation of noises (col. 24, lines 25-27).

In regard to claims 8 and 13, Ookawa et al. teaches a method using figs.1 storing the control map [13a, 13b, 13c] in a memory (RAM, fig.4b, column 20, lines 55-60, column 13, lines 59-67) in the controller [ECU] (column 7, lines 53-55 & column 20, lines 1-20). The other limitations for the base claim are explained in claim 1.

In regard to claim 10, a method as claimed in claim 9, in which the winding is energised in accordance with the advance angle profile at a predetermined speed, which speed is associated with the predetermined input power.

Ookawa et al. teaches a method, in which the coils [1a-1c] (figs.1a, 2) are energized in accordance with the advance angle profile such as the energisation on/off angles stored in the memory map [13a, 13b,13c] at a predetermined speed such the

range of rotor revolutions in said memory map [13a, 13b,13c] (see tables 1-2, col. 13 &14), which speed is associated with the predetermined input power such as predetermined reference voltage [Vr2] associated with an input current S4 (fig.2), (where the current is proportional to voltage, see col. 7, and lines 33-45; memory map includes energisation information, current data, see col. 14, lines 1-65).

In regard to claim 11, a method, in which the step of producing the angle correction factor includes applying predetermined incremental changes to the advance angle profile, measuring the input power after each incremental change and comparing the measured input power with the predetermined input power.

Ookawa et al. teaches a method, in which the step of producing the angle correction factor (fig.19, column 15, lines 20-32) includes applying predetermined incremental changes (incremental angle [X, X+15], see fig.9 & column 11, lines 43-58) to the advance angle profile such as the energisation on/off angle information in the memory map [13a, 13b, 13c] (column 20, lines 1-20, lines 41-48, column 14, lines 18-34) and comparing the measured input power with the predetermined input power (fig. 2 shows a measured current signal [S6] (corresponding to voltageVs6) is compared via the comparator [7a] with a predetermined input power such as the reference voltage [Vr2]).

In regard to claim 14, a method further comprising transmitting the angle correction factor to the controller by means of radio frequency signals.

Ookawa et al. teaches that energisation of motor coils [1a-1c] (figs 1a, 2) using current is associated with the rotation angle of the rotor [R] of the motor [1] (see col. 20,

lines 1-20), where the phase current signals from respective phase coils [1a, 1b, 1c] (see fig. 1a) having a frequency associated with the revolution of a rotor [R] (fig.18) of a motor [1] is transmitted to the controller [ECU] from respective current sensors [2, 3, 4] (or rotation angle sensing signal is shown transmitted to the CPU of the ECU from angle sensor [1d] in fig.1a).

In regard to claim 15, Ookawa et al. teaches a method in which the input voltage such as [Vs6] (fig.2) applied to the phase winding [1a] is substantially constant as the speed and torque of a motor [SR] is constant (see column 15, lines 13-15) and current is proportional to voltage (column 7, lines 42-45, a constant current compensation value [CP1] is applied to three phases, see column 17, lines 58-59).

In regard to claim 16, Ookawa et al. teaches a computer readable medium such as a CPU 11 (fig.1b) comprising a computer program such as a flow chart (column 5, lines 40-41) stored thereon (memory, column 7, lines 53-55, column 8, lines 54-58, column 13, lines 59-63) for controlling a machine [1].

In regard to claim 19, Ookawa et al. shows in (fig.1a) a machine such as a switched reluctance motor [1] (col.1, lines 55-58).

In regard to claim 20, Ookawa et al. teaches an electric machine such as an electric motor [1], but do not mention a cleaning appliance incorporating said electrical machine.

A cleaning appliance incorporating an electrical machine is obvious in that an electrical motor is used in variety of cleaning appliances such as a vacuum cleaner is well known.

In regard to claims 30 and 31, a control map, wherein the angle correction factor further depends on an input voltage.

Current is adjusted based on rotation angle of a rotor [r] (fig.18) of a motor [1], wherein angle data such as energisation on/off angle, angle correction (fig.19; angle correction outputted to memory, see fig. 4a-b) accessed from memory map [13] is used to adjust the current supplied to the motor coils [1a-1c], wherein the current supplied is in the form of a voltage (see figs.1a, 2 & col. 7, lines 42-45).

8. Claims 8 and 13 are also rejected under 35 U.S.C. 103(a) as obvious over Kaplan et al.

In regard to claims 8 and 13, storing the control map in a memory in the controller is obvious in that operating parameters such as turn on/off conduction angles, rotor speed range information, excitation voltage information are constructed in the map (figs 5-6) and accessed by a controller [40] in fig.1 to operate a machine [20]).

9. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kaplan et al. as applied to claim 18 and in view of Elliott et al. (US 6,313,597).

In regard to claim 20, Kaplan et al. teaches an electrical machine [20] (fig.1) but do not mention a cleaning device.

Elliot et al. disclose in fig. 2 a cleaning device [19] incorporating an electrical machine [12] (column 3, lines 66-67).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the cleaning device of Elliot et al. in the system of Kaplan et al. because a floor cleaning appliance is started with reduced torque and thereby

reducing stress on a motor (column 2, lines 16-19, column 4, line 67 and column 5, lines 1-3).

Response to Arguments

10. Applicant's arguments filed on 12/23/08 have been fully considered but they are not persuasive for the following reasons.

Applicants' argue that Kaplan neither discloses nor suggests applicants' claimed control map, in particular the predetermined angle correction factor and also argues that Kaplan's conduction angle adjustment is not predetermined, like Applicants' angle correction factor.

Examiner disagrees with the above statements. Applicants' claim language for claims 1 and 9, state that "wherein the angle correction factor depends on a difference between a measured input power to the machine and a predetermined input power at a predetermined rotor speed"

Angle correction factor is applied after depends on the power difference output.

Kaplan clearly shows in fig. 9 a power difference output [77] supplied to the controller [78], where the turn on angle is adjusted based on the power output [77], which is a difference of measured power signal [line 76] and a predetermined power [line 71]. Angle correction is angle adjustment or angle compensation made associated with turn-on angles, conduction angles used as operating parameters in a control map (map, for example is constructed, see col. 7, lines 6-37). Angle correction factor is implemented in the adjustment of turn on angle because correction factor is applied

depending on the difference of power output [line 77] (as claimed by applicants for claims 1 and 9).

Kaplan's angle adjustment is predetermined as the prior art teaches (<u>turn-on & turn off angle defined by a predetermined angular relationship or orientation of the rotor 23 relative to the stator 21, see col. 5, lines 7-41</u>).

Applicants' further argue that Ookawa neither discloses nor suggests applicants' claimed angle correction factor.

Ookawa et al. in fig. 19 shows an advance angle correction associated with energisation off angle (see col. 5, lines 57-60, col. 15, lines 20-40), where the energisation on/off angle is included in memory map 13a and fig. 4a further teaches a predetermined angle correction factor [CPS] outputted to memory; correction to commanded angle, (see figs.5a-b); angle correction associated with speed, (see column 16, lines 5-19) & memory map 13a includes energisation on and off angles, which are adjusted (see col. 24, lines 3-26). Objection to claims 7,8,13,14,15,16 and 18 has been withdrawn.

Citation of pertinent prior art

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

A. Miyata et al. (6,803,739) discloses a method and apparatus for controlling a synchronous motor, where adjusting an advance angle of the rotor upon excitation of the motor.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANTONY M. PAUL whose telephone number is (571)270-1608. The examiner can normally be reached on Mon - Fri, 7:30 to 5, Alt. Fri, East.Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benson Walter can be reached on (571) 272-2227. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BENTSU RO/
Primary Examiner, Art Unit 2837

/Antony M Paul/
Examiner, Art Unit 2837 03/05/2009